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EXAMINER	
NOLAN, DANIEL A	
ART UNIT	**PAPER NUMBER**
2655	7

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/748,453	HWANG ET AL.	
	Examiner	Art Unit	
	Daniel A. Nolan	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *09 June 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(Note that this application has been included in **Art Unit 2654**, and that this AU number should be used in all future correspondence.)

Response to Amendment

2. The reply of 09 June 2003 was entered to the following effect:

- The specification was changed as indicated and the objection is withdrawn.
- The claim was changed as indicated and the objection is withdrawn.

Drawings

3. The corrected or substitute drawings were received on 09 June 2003. These drawings are acceptable and the objections are withdrawn.

Response to Arguments

4. Applicant's arguments filed 09 June 2003 have been fully considered but they are not persuasive.

"To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently." In re Schreiber, 128 F.3d at 1477. Anticipation of a patent claim requires a finding that the claim at issue "reads on" a prior art reference. See Titanium Metals Corp. v. Banner, 778 F.2d 775, 781, 227 USPQ 773, 778 (Fed. Cir. 1985). In other words, if granting patent protection on the disputed claim would allow the patentee to exclude the public from practicing the prior art, then that claim is anticipated, regardless of whether it also covers subject matter not in the prior art. See id. at 781.

That given, the argument that the prior art of Smith *et al* does not read on the "decoding" as specified happens not to be the case. The steps taken by Smith *et al* to reduce the signal to its constituent parts is equivalent of the term "decode" used in the disclosure. Because the action is not applied to a signal that was "encoded" for storage or transmission, the terminology used by the applicant is less suited.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed.

Cir. 1999). In this case, the decoding described in the specification is equivalent to the processing done by the prior art of record.

- Relating directly to this same issue as regards to claims 1-4, the consequent argument that the prior art does not operate on speech signal is belied by the overview provided in figure 8, clearly showing input spoken utterance (804).

  The issue of terminology and origin is continued to apply to the argument that none of the pronunciations used in the prior art of record are from a speech signal. The example cited refers to text in the alternative with other well-known methods such as a transcript dictionary.

- Regarding claim 5, the argument that incorporating text rules prevents the prior art of record from producing description from speech is not the case, as cited above. While text-based rules are incorporated in Bahl *et al*, all prior art cited and set forth with the same limits stipulate speech and the rejection is maintained.

- Regarding issues relating to claims 6-8, the argument that the prior art would not read on the features has been addressed above. The operation cited for Bahl *et al* is done for syllable-like units, as basic or fundamental units (column 5 lines 47-48), reading on the features of the claims.

  With regard to the alleged failure of the cited section to indicate *language models*, the process arrived from the language model shown in figure 1 (18B).

- Regarding issues relating to claims 9-11, the issue of the term *decoding* applied to conventional preliminary decomposition prior to analysis was addressed in response to the previous arguments, and the claim is maintained in these claims.

  The argument that the prior art of Contolini *et al* would not processes syllable-like units is likewise not the case. The cited claim is supported by the specification for processing at the syllabic level, as shown in figure 5 (column 6 line 56).

- Regarding issues relating to claim 12, Gupta *et al* (column 3 lines 27-28) provides the basis for operations done on speech signal. The argument that because Gupta *et al* matches text generated from speech indicates that Gupta *et al* does not produce speech-based phonetic descriptions requires disregarding that the text is an interim product that is originated from speech. Gupta *et al* (column 1 lines 64-67) clearly lays out that utterances create new entries for recognition.

- Regarding claim 18, Contolini *et al* (column 4 line 40) directly processes speech input, and the rejection is maintained over the combination of Gupta *et al* and the facility for Contolini *et al* to produce audible output.

- Regarding the issues with claims 19-21, the cited application of *sub-words* by Gupta *et al* allows correspondence to the *syllable-like* unit of the instant application and the rejections are maintained with this reference over the prior art of Schultz.

- With response similar to the Applicant's assertion that the limits of the claim carry to the dependent claims, the Examiner relies on the rejections made to those prior features likewise applying to the unwritten limits of the dependent claims and so the features are not explicitly addressed unless specified in the language of the claim.
- Further, with regard to those arguments that the individual features were not cited and so there is no suggestion to combine the references, the Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. *In re Nomiya, 184 USPQ 607 (CCPA 1975).* However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what motivates the disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin, 170 USPQ 209 (CCPA 1971).* References are evaluated by what they suggest to one versed in the art, rather than by their specific disclosure. *In re Bozec, 163 USPQ 545 (CCPA) 1969.*

Claim Rejections - 35 USC § 102

Smith *et al*

1. Claims 1–4 are rejected under 35 U.S.C. 102(a) as being anticipated by Smith *et al* (U.S. Patent 6,408,271 B).

2. Regarding claim 1, the features employed by Smith *et al* in *generating phrasal transcriptions for speech recognition dictionaries by permutating word transcriptions for each vocabulary item in an orthographic phrase* read on the features of the *method for adding an acoustic description of a word to a speech recognition lexicon* of the immediate application as follows:

- Smith *et al* (column 6 lines 15-20) reads on the feature of *converting the text of the word into at least one orthographically derived acoustic description of the word;*
- Smith *et al* (column 6 lines 42-46) reads on the feature of *generating a score for an orthographically derived acoustic description based in part on a comparison between the orthographically derived acoustic description and a speech signal representing a user's pronunciation of the word;*
- Smith *et al* (with *generating* steps 202 & 302 in figures 2 & 3) reads on the feature of *decoding the speech signal* 804 in figure 8) *representing the user's pronunciation of the word to produce a decoded acoustic description of the word and a score for the decoded acoustic description; and*

- Smith *et al* (column 12 lines 26-37) reads on the feature of *selecting one of the orthographically derived acoustic description and the decoded acoustic description as the acoustic description of the word based on the score for the orthographically* (column 12 lines 30-31) *derived acoustic description and the score for the decoded acoustic description* (column 12 lines 35-37).

3. Regarding claim 2, the claim is set forth with the same limits as claim 1. Smith *et al* (column 13 lines 53-56) reads on the feature of *generating an acoustic model score.*

4. Regarding claim 3, the claim is set forth with the same limits as claim 2. Smith *et al* (column 13 lines 57-60) reads on the feature of *generating an acoustic model score for at least one decoded acoustic description and using the score as at least part of the score for the decoded acoustic description.*

5. Regarding claim 4, the claim is set forth with the same limits as claim 3. Smith *et al* (802 in figure 8) reads on the feature of *using the same acoustic model* (specified by *"**a** speech model set"*, column 13 line 52) *to generate both acoustic model scores* (lines 46-56).

Gupta *et al*

6. Claim 12–17 are rejected under 35 U.S.C. 102(a) as being anticipated by Gupta *et al* (U.S. Patent 6,243,680 B1).

7. Regarding claim 12, the *apparatus* of Gupta *et al* *for obtaining a transcription of phrases through text and spoken utterances* relates to the features for *a computer-readable medium* of the immediate application as follows:

- Gupta *et al* (column 1 lines 56-57) reads on the feature of *receiving text of a word* (column 3 lines 27-28) *for which a phonetic description is to be added to a speech recognition lexicon* (line 56) and on the feature of *receiving a representation of a speech signal produced by a person pronouncing the word* (line 57);
- Gupta *et al* (412 → 400 in figure 4) reads on the feature of *converting the text of the word into a text-based phonetic description of the word;*
- Gupta *et al* (402 → 404 in figure 4) reads on the feature of *generating a speech-based phonetic description of the word from the representation of the speech signal; and*
- Gupta *et al* (406 in figure 4) reads on the feature of *selecting a phonetic description of the word to add to the speech recognition lexicon by selecting between the text-based phonetic description and the speech-based phonetic description based in part on the correspondence between each phonetic description and the representation of the speech signal.*

8. Regarding claim 13, the claim is set forth with the same limits as claim 12. Gupta *et al* (column 7 lines 29-33) reads on the feature of *generating a plurality of possible phonetic descriptions, using at least one model* (column 4 lines 19-21) *to score each possible phonetic description* (column 5 lines 3-8) *and selecting the possible phonetic description with the highest score as the speech-based phonetic description* (column 5 line 16-18).

9. Regarding claim 14, the claim is set forth with the same limits as claim 13. Gupta *et al* (column 9 lines 47-62) reads on the feature of *using an acoustic model* (of *allophones,* column 9 line 59) *and a language model* (using *linguistic rules*, column 9 line 38).

10. Regarding claim 15, the claim is set forth with the same limits as claim 14. Gupta *et al* reads on the feature of *using a language model comprises using a language model that is based on syllable-like units* (with the *sub-word units* of column 9 line 62).

11. Regarding claim 16, the claim is set forth with the same limits as claim 15. Gupta *et al* (column 10 lines 6-7) reads on the feature of *generating acoustic model scores for each of the phonemes in a syllable-like unit &* (in column 10 lines 15-18) *summing the acoustic model scores of the phonemes to generate an acoustic model score for the syllable-like unit.*

12. Regarding claim 17, the claim is set forth with the same limits as claim 12.

- Gupta *et al* (column 10 lines 64-66) reads on the feature of *generating a score for the text-based phonetic description based on the correspondence* (column 11 lines 29-31) *between the text based phonetic description and the representation of the speech signal;*
- Gupta *et al* (column 12 lines 10-16) reads on the feature of *generating a score for the speech-based phonetic description based on the correspondence between the speech-based phonetic description and the representation of the speech signal*
- Gupta *et al* (column 14 lines 24-27) reads on the feature of *selecting the phonetic description with the highest score.*

Claim Rejections - 35 USC § 103

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Smith *et al* & Bahl *et al*'426

14. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith *et al* in view of Bahl *et al*'426 (U.S. Patent 5,875,426).

15. Regarding claim 5, the claim is set forth with the same limits as claim 3. Smith *et al* does not teach *generating a language model score.* The Bahl *et al*'426 method/system for *recognizing speech having word liaisons by adding a phoneme to reference word models* (column 3 lines 55-60) reads on the feature of *generating a language model score for the at least one decoded acoustic description and* (lines 58-59) *using the language model score as part of the score for the at least one decoded acoustic description.*

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*'426 to the device/method of Smith *et al* so as to consider context among the bases of making an acoustic decision.

Smith *et al*, Bahl *et al*'426 & Bahl *et al*'921

16. Claims 6–8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith *et al* in view of Bahl *et al*'426 and further in view of Bahl *et al*'921 (U.S. Patent 6,377,921).

17. Regarding claim 6, the claim is set forth with the same limits as claim 5. Smith *et al* does not teach *generating a language model score.* The Bahl *et al*'921 method/system for *identifying mismatches between assumed and actual pronunciations of words* (column 2 lines 30-38) reads on the feature of *generating an acoustic model score and a language model score* (lines 39-40 from 18B in figure 1) *for a sequence of syllable-like units* (column 5 lines 47-48) *and* (with lines 55-61) the further feature that *the decoded acoustic description is derived from the sequence of syllable-like units.*

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*'921 to the device/method of Smith *et al* so as to increase precision and avoid prosodic differences by addressing the lower cohesive elements of speech.

18. Regarding claim 7, the claim is set forth with the same limits as claim 6. Smith *et al* does not teach *generating a language model score.* Bahl *et al*'921 (with the "*phones*" of column 6 line 13) reads on the feature of *dividing the sequence of syllable-like units into a sequence of phonemes*, which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*'921 to the device/method of Smith *et al* so as to not to overlook minor utterances by considering each potential word segment separately.

19. Regarding claim 8, the claim is set forth with the same limits as claim 6. Smith *et al* does not teach *generating a language model score.* Bahl *et al*'426 (column 3 lines 51-53) reads on the feature of *generating a language model score based on a trigram language model for syllable-like units,* which would have made it obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Bahl *et al*'426 to the device/method of Smith *et al* so as to more quickly isolate candidates from combinations of segments.

Smith *et al*, Bahl *et al*'426 & Contolini *et al*

20. Claims 9–11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith *et al* in view of Bahl *et al*'426 and further in view of Contolini *et al* (U.S. Patent 6,233,553 B1).

21. Regarding claim 9, the claim is set forth with the same limits as claim 6. Smith *et al* does not teach *generating a language model score.* Contolini *et al*, in the *method and system for automatically determining phonetic transcriptions associated with spelled words*, reads on the feature of *generating acoustic model* (of claim 4 limiting by claim 1) *scores for each of a sequence of phonemes* (column 7 line 6) *that form the sequence of syllable-like units* (column 6 line 56).

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini *et al* to the device/method of Smith *et al* so as to be able to relate the results of the recognition that might require correction to those elements that would be familiar to the speaker.

22. Regarding claim 10, the claim is set forth with the same limits as claim 1. Smith *et al* does not specify the product reaching a state accessible for human intervention. Contolini *et al* does so permit such adjustments, with (figure 2) reading on the feature of *displaying a user interface comprising an edit box* (item 35) *in which a user may enter the text of the word* (as according to the 1st lines of the Abstract) *and a list box* (item 34) *that displays words for which an acoustic description has been previously added to the speech recognition lexicon.*

It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini

et al to the device/method of Smith *et al* so as to permit refinements that recognize exceptions to the rules used to set up the vocabulary.

23. Regarding claim 11, the claim is set forth with the same limits as claim 10. Smith *et al* does not specify the product reaching a state accessible for human intervention.

- Contolini *et al* (figure 2 & column 4 lines 17-25) reads on the features of *receiving an indication that a user has selected a word in the list box* (line 22);
- Contolini *et al* (column 5 lines 55-56) reads on the features of *retrieving the added acoustic description of the word from the speech recognition lexicon and converting the retrieved acoustic description into an audible signal.*
- It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini *et al* to the device/method of Smith *et al* so as to audibly confirm the validity of the revision.

Gupta *et al* & Contolini *et al*

24. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gupta *et al* in view of Contolini *et al*.

25. Gupta *et al* does not specify the product reaching a state accessible for human intervention, so does not produce audible pronunciations.

- Contolini *et al* (by selecting the *speaker icon* at the left of figure 2) reads on the feature of *receiving an instruction to generate a audible pronunciation of a phonetic description previously added to the speech recognition lexicon,*
- Contolini *et al* (column 4 line 52-56) reads on the feature of *retrieving the added phonetic description from the speech recognition lexicon, causing an audible pronunciation to be generated based on the retrieved phonetic description* (column 4 line 40).
- It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Contolini *et al* to the device/method of Gupta *et al* so as to evaluate generated speech.

Schultze & Gupta *et al*

26. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being anticipated by Schultze (U.S. Patent 6,167,369 A) in view of Gupta *et al*.

27. Regarding claim 19, the features of the *automatic language identification using both N-gram and word information* of Schultze reads on the *speech recognition system having a language model generated through a process* of the immediate application as follows:

- Where Schultze does not specifically mention breaking each word into syllable-like units, Gupta *et al* reads on the feature of *breaking each word in a dictionary*

into syllable-like unit (with the *sub-word units* of column 9 line 62). Schultze (column 1 line 29) then reads on the further feature of *for each word, grouping the syllable-like units of the word into n-grams;*

- Schultze (column 12 lines 21-22) reads on the feature of *counting the total number of n-gram occurrences in the dictionary;*
- Schultze (column 12 lines 40-41) reads on the feature of *for each n-gram, counting the number of occurrences of the n-gram in the dictionary and dividing this count by the total number of n-gram occurrences to form a language model probability for the n-gram.*
- It would have been obvious to a person of ordinary skill in the art of speech signal processing at the time of the invention to apply the method/teachings of Gupta *et al* to the device/method of Schultze so as to separate the contiguous signal into discrete portions corresponding to the dictionary for match processing.

28. Regarding claim 20, the claim is set forth with the same limits as claim 19. Schultze (column 12 lines 35-37) reads on the feature of *breaking the words by preferring syllable like units that occur more frequently in the dictionary over syllable-like units that occur less frequently.*

29. Regarding claim 21, the claim is set forth with the same limits as claim 20. Schultze (column 12 line 40) reads on the feature of *updating the frequencies of the syllable-like units into which the word is broken.*

Conclusion

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

31. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Daniel A. Nolan at telephone (703) 305-1368 whose normal business hours are Mon, Tue, Thu & Fri, from 7 AM to 5 PM.

If attempts to contact the examiner by telephone are unsuccessful, supervisor Richemond Dorvil can be reached at (703)305-9645.

The fax phone number for Technology Center 2600 is (703)872-9314. Label informal and draft communications as "DRAFT" or "PROPOSED", & designate formal communications as "EXPEDITED PROCEDURE".

Formal response to this action may be faxed according to the above instructions,

or mailed to: Box AF
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Washington, D.C. 20231

or hand-delivered to: Crystal Park 2,
2121 Crystal Drive, Arlington, VA,
Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to Technology Center 2600 Customer Service Office at telephone number (703) 306-0377.

Daniel A. Nolan
Examiner
Art Unit 2654

DAN/d
July 13, 2003

Richemond Dorvil
Primary Examiner